



Errors and Conflicting Opinions

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1 Scope

The purpose of this document is to provide guidelines for Canadian Law Enforcement Agencies when assessing risk, addressing errors, and conflicting opinions at both the Analysis and Evaluation phases of the friction ridge examination process.

2 Terms and Definitions

Administrative or Clerical Inaccuracy: when an examiner forms an accurate opinion during the Analysis, Comparison, Evaluation (ACE) process; however, they fail to record or transcribe the corresponding information when reporting their findings.

Conflicting Opinions: means differing suitability opinions or source determination opinions that become apparent during, or at the end of an examination or during review.

Consensus Review (Consensus Opinion): a type of examination in which a reported decision or conclusion is determined that reflects the collective judgement (e.g., majority) of a group of examiners.

Exclusion: the opinion that two friction ridge impressions did not originate from the same source.

Erroneous Exclusion: the incorrect opinion that two friction ridge impressions did not originate from the same source.

Erroneous Identification: the incorrect opinion that two friction ridge impressions originated from the same source.

Erroneous Opinion: means an incorrect opinion, and includes those opinions made when determining suitability and all opinions related to friction ridge examinations.

Friction Ridge Impression: an impression of friction ridges from palmar or plantar skin.

Identification: the opinion that two friction ridge impressions originate from the same source.

Inconclusive: the opinion that two friction ridge impressions could not be identified or excluded.

Known Friction Ridge Impression: an impression of friction ridges, recorded under controlled conditions, where the source of the impression is known.

Missed Exclusion: the failure to make an exclusion when an exclusion could have been made based on the information available.

Missed Identification: the failure to make an identification when an identification could have been made based on the information available.

Quality Control Coordinator: designated by the Forensic Identification Service provider. Responsible for the quality assurance review processes, and coordination of investigations where errors, conflicts or deficiencies are detected. This responsibility can be delegated to an examiner's immediate supervisor.

Root Cause Analysis: a method of problem solving used for identifying the origins or potential reasons that caused the problem to occur.

Suitability: an examiner's opinion that there is sufficient quality and quantity of information within an unknown friction ridge impression to warrant a comparison to a known friction ridge impression.

Unknown Friction Ridge Impression: an impression of friction ridges where the source of the impression is unknown.

Verification: the application of a second ACE process as utilized by a subsequent examiner to either support or refute the opinions of the original examiner.

3 Introduction

Friction ridge examiners in Canada are taught to analyze, compare, and evaluate friction ridge detail using ACE-V, a holistic qualitative and quantitative framework¹. ACE-V is a subjective process based on an examiner's knowledge, training and experience, as such, errors can occur at the various stages of the ACE-V process. Errors can include, but are not limited to, an incorrect suitability assessment during the Analysis phase, or when reporting an identification, inconclusive, or exclusion opinion during Evaluation. Canadian law enforcement agencies need to have quality control policies and procedures to recognize and document errors, determine the root cause of any errors, and implement any potential remedial actions.

It's unlikely a previous opinion error will prevent an examiner from being recognized as an expert in court. The examiner should be prepared to address the error by providing a comprehensive explanation of any factors that contributed to the error and any actions taken by the Forensic Identification Service (FIS), such as a root cause analysis (Appendix A) and any remedial actions (Appendix B).

Conflicts or errors that occur during training at educational institutions, can be dealt with as per the policies of the training provider/facility.

In this document, the following verbal forms are used: "shall" indicates a requirement; "should" indicates a recommendation; "may" indicates permission; and "can" indicates a possibility or capability.²

4 Automatic Removal Policy

CanFRWG does not endorse an automatic removal policy in which an erroneous opinion results in a friction ridge examiner being permanently removed from forensic duties. It is left up to the FIS to determine the consequences of any error. CanFRWG recommends a more measured approach, as laid out in this document.

5 Conflicting Opinions

5.1 Conflicting opinions should be documented to help track the causes and frequency of conflicts between examiners. The types of conflict, root causes of conflicts, or frequency of conflicts may identify the need for supplemental training, additional mentoring, policy and procedure updates, or enhanced monitoring of casework. Appendices A-C provide guidance for managing conflicting opinions.

5.2 Suitability determinations

5.2.1 A conflicting suitability opinion can occur in two situations:

¹ Ashbaugh, DR. (1999) Quantitative-Qualitative Friction Ridge Analysis: An Introduction to Basic and Advanced Ridgeology. CRC Press: Boca Raton, FL

² Organization of Scientific Area Committees (OSAC) for Forensic Science - Physics/Pattern Interpretation Scientific Area Committee - Friction Ridge Subcommittee. 2017. Guideline for the Articulation of the Decision-Making Process Leading to an Expert Opinion of Source Identification in Friction Ridge Examinations, version 1.0
2025-01

5.2.1.1 The original examiner determines the unknown friction ridge impression to be 'unsuitable'. A file review or Verification is done which determines that the 'unsuitable' opinion may be inappropriate.

5.2.1.2 The original examiner determines the unknown friction ridge impression to be 'suitable'. A verifier determines the unknown impression to be 'unsuitable'.

5.2.2 Conflicting suitability opinions should be reviewed by the FIS manager/supervisor or the Quality Control Coordinator.

5.2.3 Conflicting suitability opinions should result in the following:

5.2.3.1 The unknown friction ridge impression will be assigned to a third qualified friction ridge examiner.

5.2.3.2 If the third examiner determines the impression to be 'suitable', the ACE process should continue with the two examiners who deemed the impression as 'suitable'.

5.2.3.3 If the third examiner determines the impression to be 'unsuitable', the ACE process should stop. See *conflicting suitability opinions* workflow at the end of the document.

5.2.4 Despite the results from the third examiner, the FIS manager/supervisor or the Quality Control Coordinator can still proceed to a consensus review if deemed necessary.

5.2.5 The FIS manager/supervisor or the Quality Control Coordinator will determine if any remedial action is necessary.

5.3 Conflicting opinions of source determination

5.3.1 Conflicting source determination opinions that are detected at the end of the Verification process should be reported to the appropriate FIS manager/supervisor or Quality Control Coordinator and subsequently reviewed and documented.

5.3.2 Conflicting source determination opinions should result in the following:

5.3.2.1 A third examiner will conduct an ACE of the unknown friction ridge impression.

5.3.2.2 If the third examiner's opinion agrees with one of the first two examiners, the process should stop. The opinion agreed upon by two examiners should be established as the accepted opinion.

5.3.2.3 If the third examiner's opinion is different from that of the first two examiners then a consensus review will occur. If the agency has too few examiners to perform a consensus review or the other examiners in the agency are biased for the case, an outside agency examination should occur, see Appendix C for details.

5.3.2.4 The opinion agreed upon by the majority of members in the consensus review will be established as the accepted opinion.

5.3.2.5 If the consensus review cannot establish a majority for one opinion then the process will stop. The resulting opinion will be established as 'inconclusive'. See *conflicting opinions of source determination* workflow at the end of the document.

5.3.3 Despite the results from the third examiner, the FIS manager/supervisor or the Quality Control Coordinator can still proceed to a consensus review if deemed necessary.

5.3.4 No additional Verifications should be performed after a consensus review and/or outside agency review.

5.3.5 Regardless of the process taken, all materials (including those from a consensus review) shall be disclosed for court. This is constitutionally mandatory under the Canadian Charter of Rights and Freedoms.

6 Procedures for Suspected Errors

6.1 Errors that are discovered as a result of a file review or at the Verification phase should be documented to help track the causes and frequency of examiner errors.

6.2 In the event of an administrative or clerical inaccuracy, the FIS manager/supervisor or the Quality Control Coordinator should review the cause of the inaccuracy with the examiner and determine if any remedial action(s) is necessary.

6.3 The FIS should direct the FIS manager/supervisor or Quality Control Coordinator to perform a root cause analysis. See Appendix A for recommendations. The root cause analysis may determine the remedial action(s) needed.

6.3.1 Regardless of the remedial process completed, all supplemental training, additional mentoring, policy and procedure updates, or enhanced monitoring of casework should be well documented. This includes emails between the examiner and the FIS manager/supervisor or Quality Control Coordinator.

Appendix A – Root Cause Analysis

Appendix A provides a broad framework for identifying the origins or potential reasons that caused the error to occur. Including the following, but not limited to;

Procedural errors

- Non-conformity: The examiner failed to follow best practices, guidelines, and policies of the FIS.
 - Failure to properly document ACE
 - Failure to annotate the features at the Analysis or Comparison phase
 - Not using the annotations from the Analysis phase during the Comparison process
 - Failure to follow the ridge paths sequentially during the Comparison phase

Human judgement errors

- The examiner failed to recognize and interpret the features in the unknown friction ridge impression. This can include not detecting features and/or not differentiating between true features and background noise.
- Incorrect interpretation of the complexity of the unknown friction ridge impression
- Incorrect interpretation of distortions factors
- Incorrect analysis of tolerance values
- Failure to assign the proper weight to the (dis)agreement between the two impressions
- Failure to observe (dis)agreement
- Failure to place the appropriate weight on features first observed at the Comparison phase
- Contextual or confirmation bias
- Failure to acknowledge that the unknown impression is beyond the examiner's present knowledge and experience

Human factor aspects

- Workload
- Workflow
- Case complexity
- Physical environment
 - Lighting
 - Noise
 - Distractions
- Technology
 - Familiarity with software
 - Controls and displays
- Individual characteristics
 - Knowledge and skills
 - Experience
 - Sensory and physical capabilities
 - Alertness and fatigue
 - Drugs, medications

Appendix B – Remedial Action Recommendations

Following the root cause analysis, the FIS is responsible for determining the consequences and what remedial actions, if any, are needed. All remedial action should be documented by the FIS manager/supervisor or the Quality Control Coordinator, see 6.3.1.

During the root cause analysis, the FIS may decide to suspend the examiner's certification and/or suspend them from conducting operational friction ridge impression analysis and comparisons.

Remedial actions may include, but are not limited to;

- Review of FIS policies and protocols
- A review of prior casework
- Increased supervision, including a review of subsequent casework for a period of time
- Mentorship
- Additional training
 - ACE-V Decision Threshold (ACEVDT) – online through Canadian Police College (CPC)
 - Advanced Friction Ridge Analysis (ARIDGE) – CPC
 - Advanced Friction Ridge Analysis – Ontario Police College (OPC)
 - Other relevant courses approved by agency
- Remedial training and proficiency testing
- Methodology literature review
- Visual acuity examination
- Code of conduct investigation
- Removal from the FIS

The following are some examples to address specific types of errors. The recommendations in the examples include literature reviews, mentored exercises, and proposed advance courses. The FIS will determine which recommendations best apply to a given error. Additional training and mentoring will require specific tailoring for an employee and the issues surrounding the error. The examples below provide a starting point, but it should not be considered an exhaustive list of additional training materials.

1. Failure to recognize and identify the features in the unknown friction ridge impression;
 - Literature review of the importance of feature recognition and selection
 - Neumann C, Champod C, Yoo M, Genessay T, Langenburg G. (2013) Improving the Understanding and the Reliability of the Concept of “Sufficiency” in Friction Ridge Examination. *National Institute of Justice*, Washington DC.
<https://www.ojp.gov/library/publications/improving-understanding-and-reliability-concept-sufficiency-friction-ridge>
 - Ulery BT, Hicklin RA, Roberts MA, Buscaglia J. (2014) Measuring What Latent Fingerprint Examiners Consider Sufficient Information for Individualization Determinations. *PLoS ONE* 9(11): e110179. <https://doi.org/10.1371/journal.pone.0110179>.
 - Mentored exercise
 - Feature annotations on a selection of unknown friction ridge impressions to assess the examiner's ability to recognize and select features.
 - Advanced course
 - ACE-V Decision Threshold Course – Includes a module on feature recognition and selection

- Review of subsequent casework for a period of time to be determined by the FIS
2. Incorrect interpretation of the complexity of the unknown friction ridge impression;
- Literature review
 - SWGFAST Document #10 Standards for Examining Friction Ridge Impressions and Resulting Conclusions (2013, ver. 2.0): Part 6 Sufficiency for Conclusions
 - ANSI/ASB Best Practice Recommendation 165, Best Practice Recommendation for Analysis of Friction Ridge Impressions, 2024, 1st ed.
 - Mentored exercise
 - Complexity determination a selection of unknown friction ridge impressions
 - Courses
 - Advanced Friction Ridge Analysis – OPC
 - Advanced Friction Ridge Analysis (ARIDGE) – CPC
 - ACE-V Decision Threshold (ACEVT) – CPC
 - Review of subsequent casework for a period of time to be determined by the FIS
3. Incorrect interpretation of distortions factors;
- Literature review
 - Ashbaugh, DR. (1999) Quantitative-Qualitative Friction Ridge Analysis: An Introduction to Basic and Advanced Ridgeology. Chapter 4 – The Identification Process. CRC Press: Boca Raton, FL
 - Maceo AV. (2009) Qualitative Assessment of Skin Deformation: A Pilot Study. *Journal of Forensic Identification*, 59(4), 390-440
 - Mentored exercise
 - Re-create the distortion using a similar substrate and matrix combination. Create additional types of distortions on a variety of surfaces. Document the results to serve as a subsequent reference guide.
 - Courses
 - Advanced Friction Ridge Analysis – OPC
 - Advanced Friction Ridge Analysis (ARIDGE) – CPC
 - Review of subsequent casework for a period of time to be determined by the FIS

Appendix C – Procedures for a Consensus Review and Outside Agency Examination

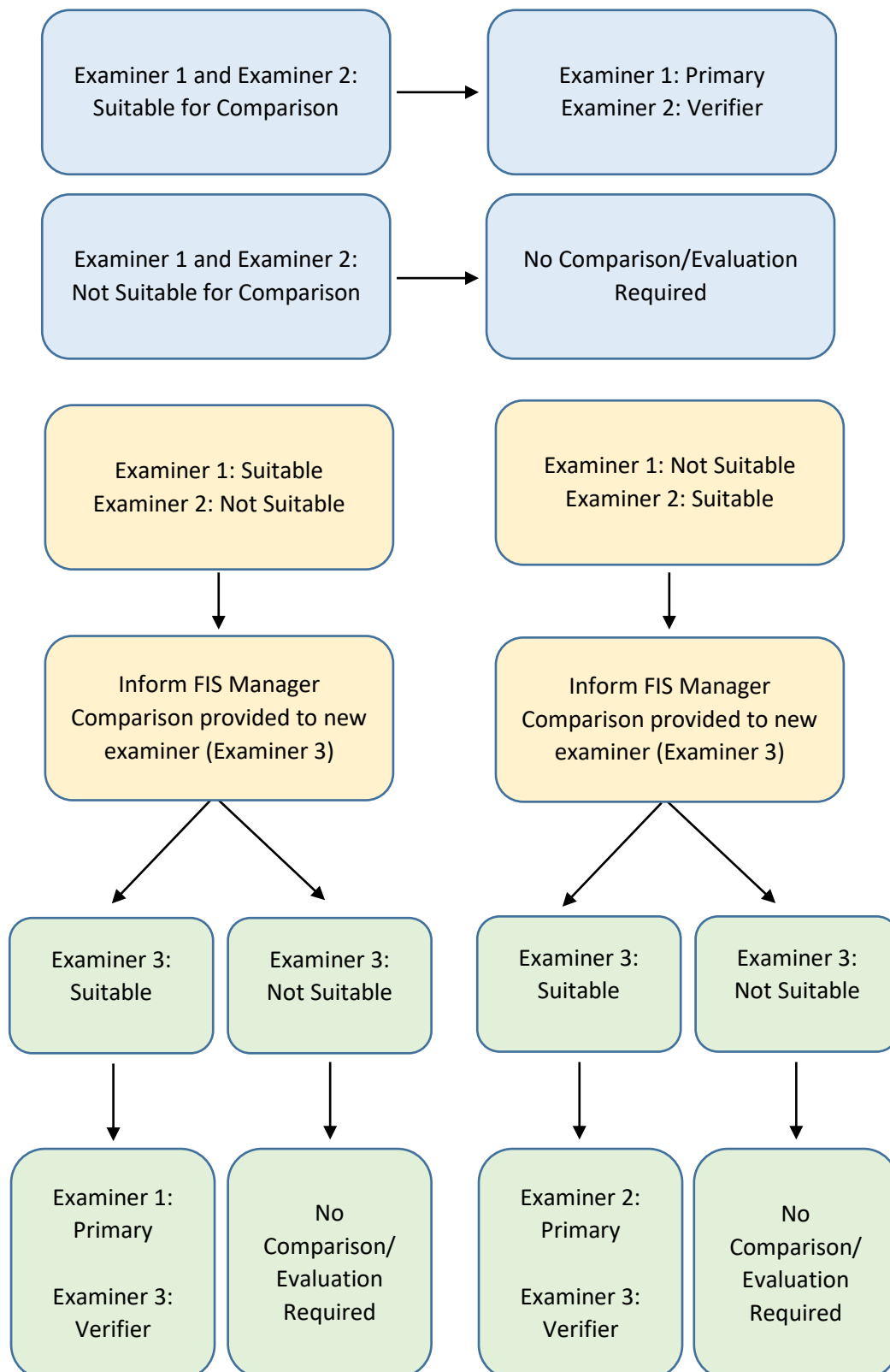
Consensus review

- A consensus review should consist of three certified friction ridge examiners. It is suggested that the FIS manager/supervisor or the Quality Control Coordinator not select the same examiners for every consensus review as this could lead to biasing results.
- FIS manager/supervisor or the Quality Control Coordinator will provide the consensus review group with all relevant but non-biasing material needed for examination.
- Material is vetted to prevent revealing the identity of the initial examiners to the extent possible. Non-disclosure agreements should be considered to protect the identity of the initial examiners.
- Members of the consensus review group shall not initiate direct contact with the examiners.
- Each examiner in the consensus group shall conduct and document an independent ACE.
- Upon completion of the ACE, the FIS manager/supervisor or the Quality Control Coordinator may facilitate a meeting with the three examiners to discuss their findings.
- If a majority is not reached because there are three different opinions, then the accepted opinion will be 'inconclusive'. All materials shall be disclosed for court purposes.
- The consensus review group will provide all materials to the FIS manager/supervisor or the Quality Control Coordinator.

Outside agency examination

It is recommended that a memorandum of understanding be established with the relevant agency prior to requesting an outside agency examination. It is recommended that the outside agency follow the steps outlined above in the 'Consensus review'.

Conflicting Suitability Opinions



Conflicting Opinions of Source Determination

